

# Fernerkundung **Histogramme**



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## Histogramm

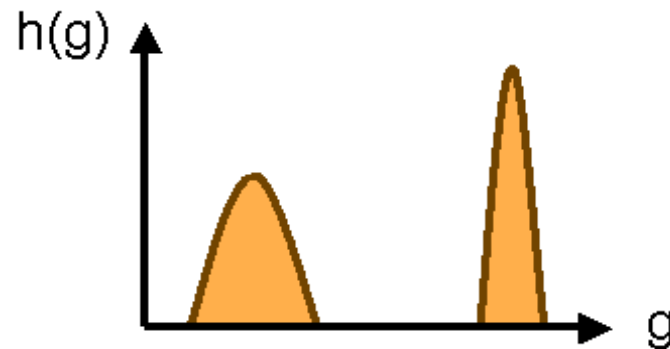
Häufigkeitsfunktion  $h(g)$   
#Pixel mit Grauwert  $g$

Beispiele:

Gleichverteilung der Grauwerte im Bild

bimodale Verteilung der Grauwerte im Bild

Anmerkung zu Bildern mit identischen Histogrammen



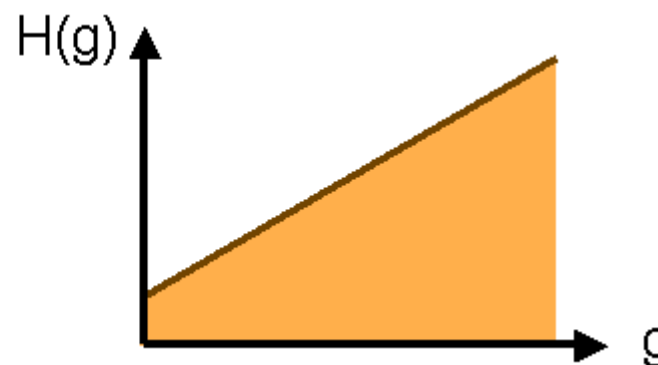
# Fernerkundung **Histogramme**

## Kumulatives Histogramm

kumulierte Häufigkeitsfunktion  $H(g)$

#Pixel mit Grauwerten =  $g$

Beispiel kumulatives Histogramm für Gleichverteilung



# Fernerkundung **Histogramme**

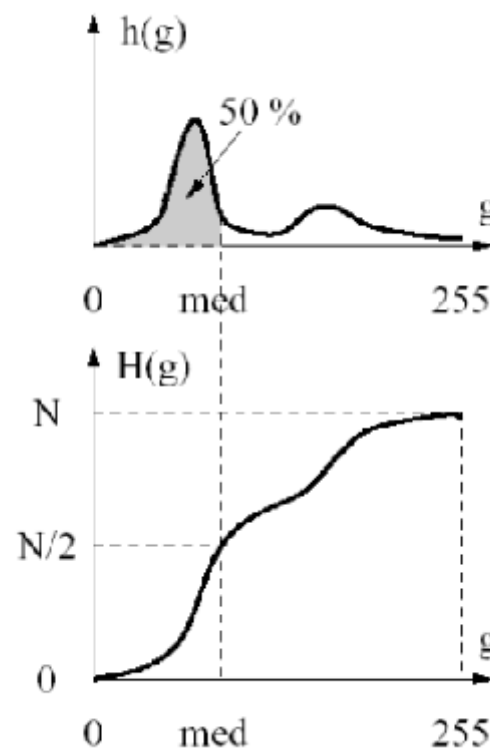
## Histogramm

Beispiel Berechnung Mittelwert

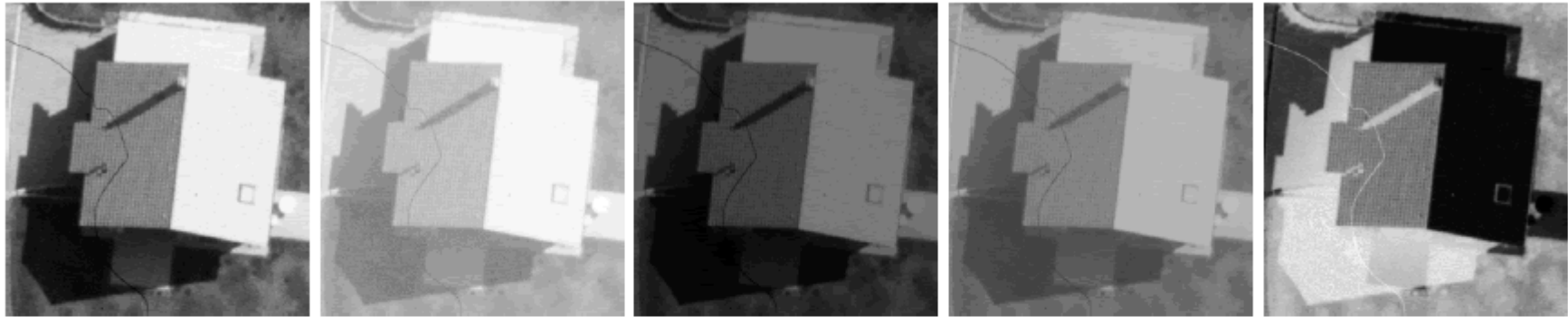
$$\mu_g = 1/n \sum h(g) g$$

## Kumulatives Histogramm

Beispiel Bestimmung Median



# Fernerkundung **Histogramme**



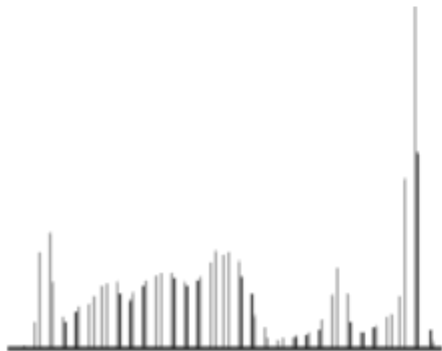
Original

heller

dunkler

kontrastärmer

negativ

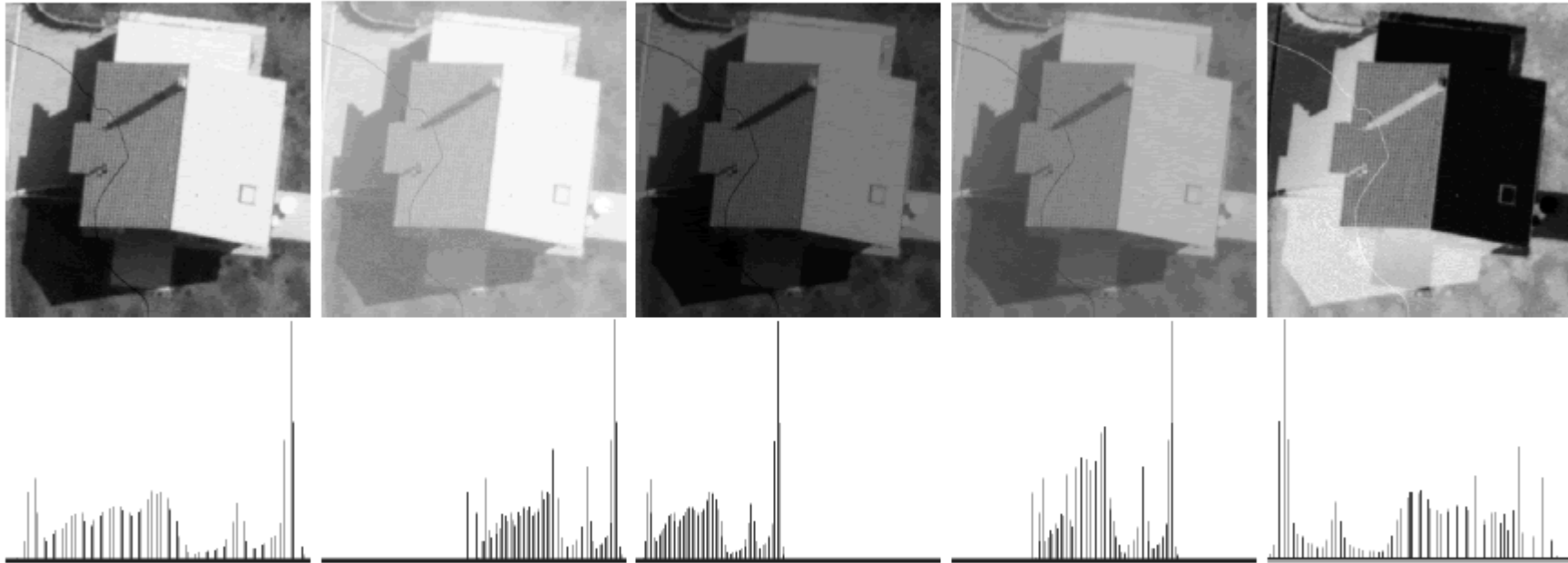


Histogramme ?

Kumulative Histogramme ?



# Fernerkundung **Histogramme**



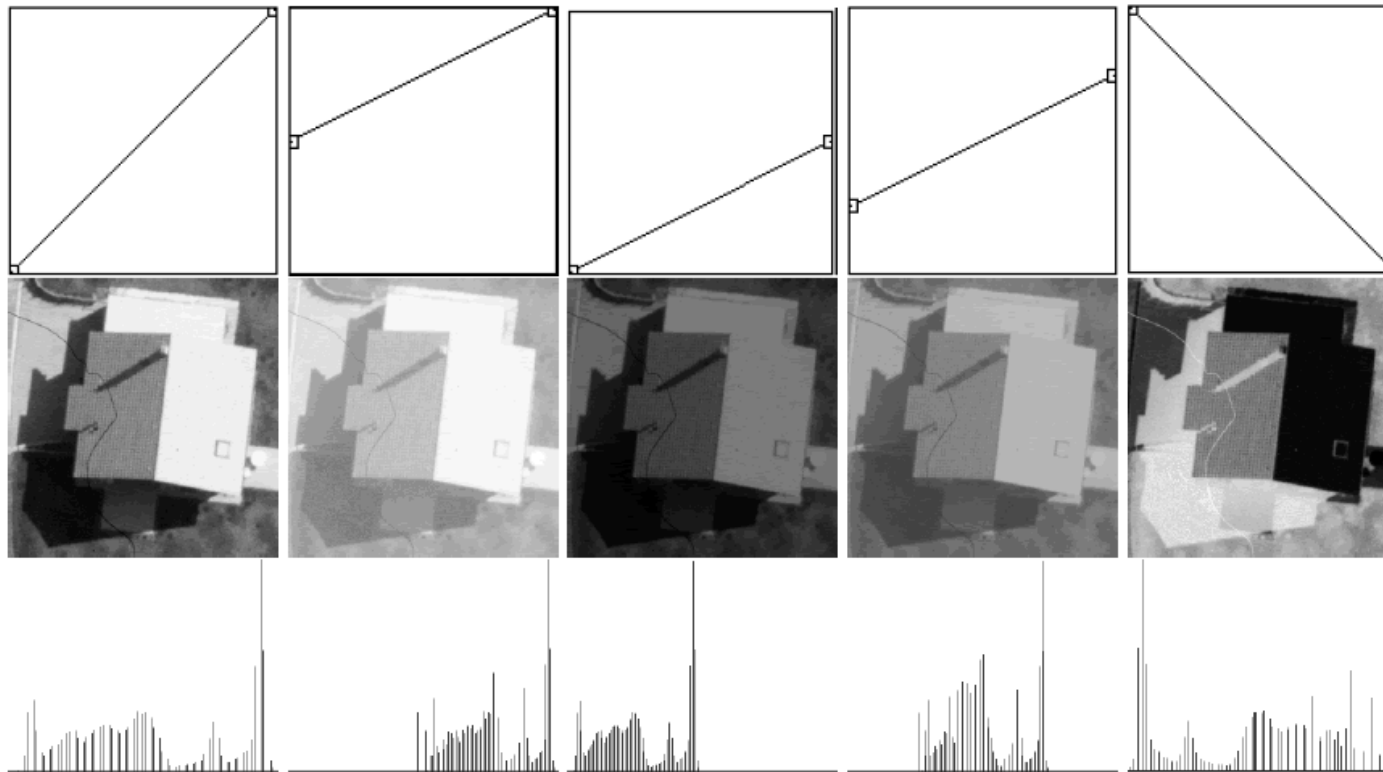
radiometrische Transformationen ?

Look-Up-Tabellen (LUT) ?



# Fernerkundung **Histogramme**

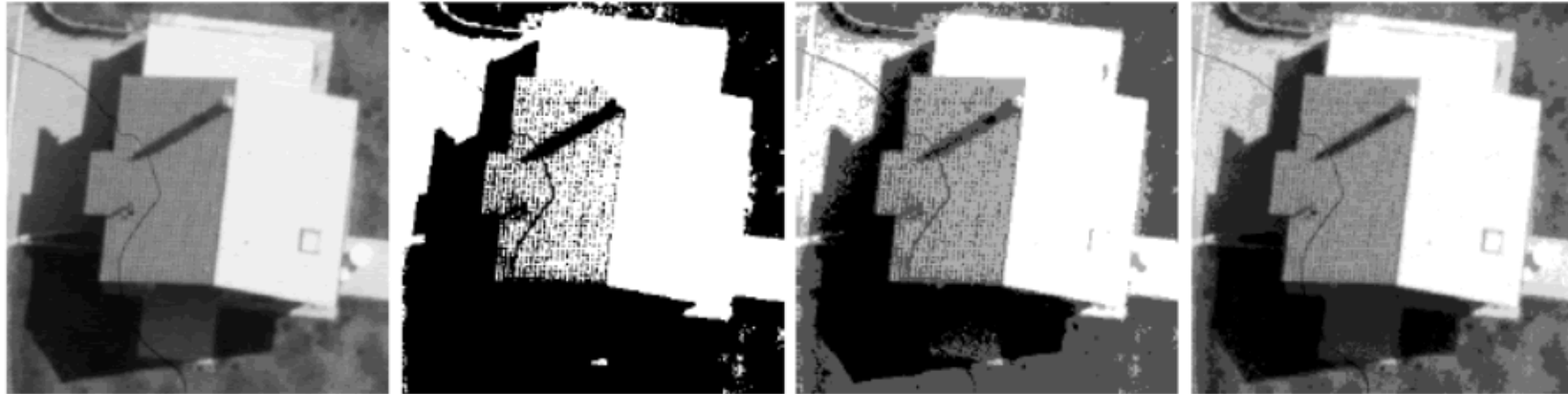
Beispiele radiometrischer Transformationen der Form  $b(r,c) = k + m a(r,c)$







# Fernerkundung **Histogramme**



256

2

4

8



**Histogramme ?**

**Kumulative Histogramme ?**

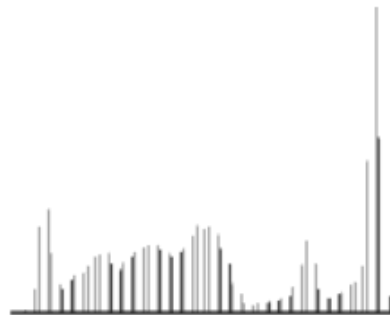
**Funktionen ?**



# Fernerkundung **Histogramme**

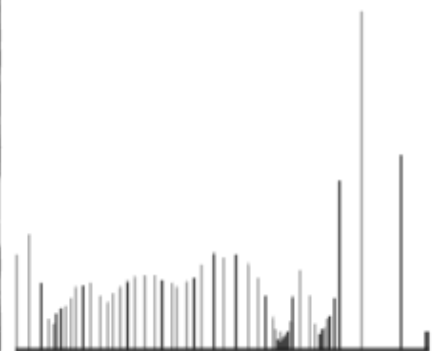
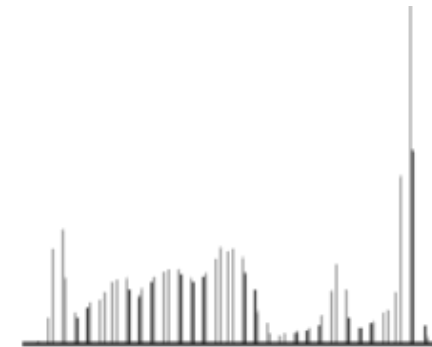
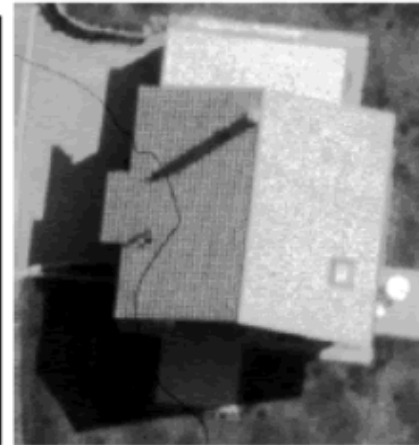
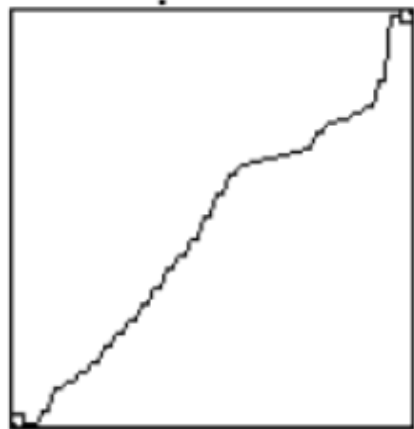
## Histogrammverebnung

- Grundidee
- Auswirkung auf Histogramm ?



# Fernerkundung **Histogramme**

## Histogrammverebnung

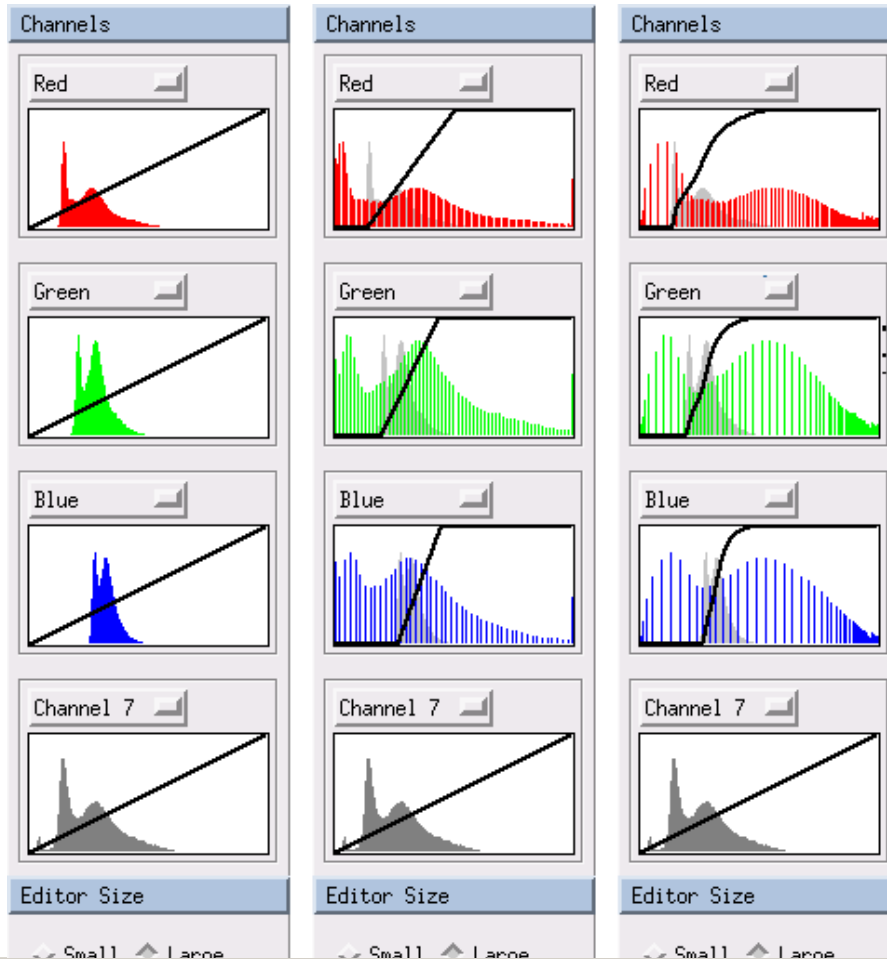


# Fernerkundung **Histogramme**

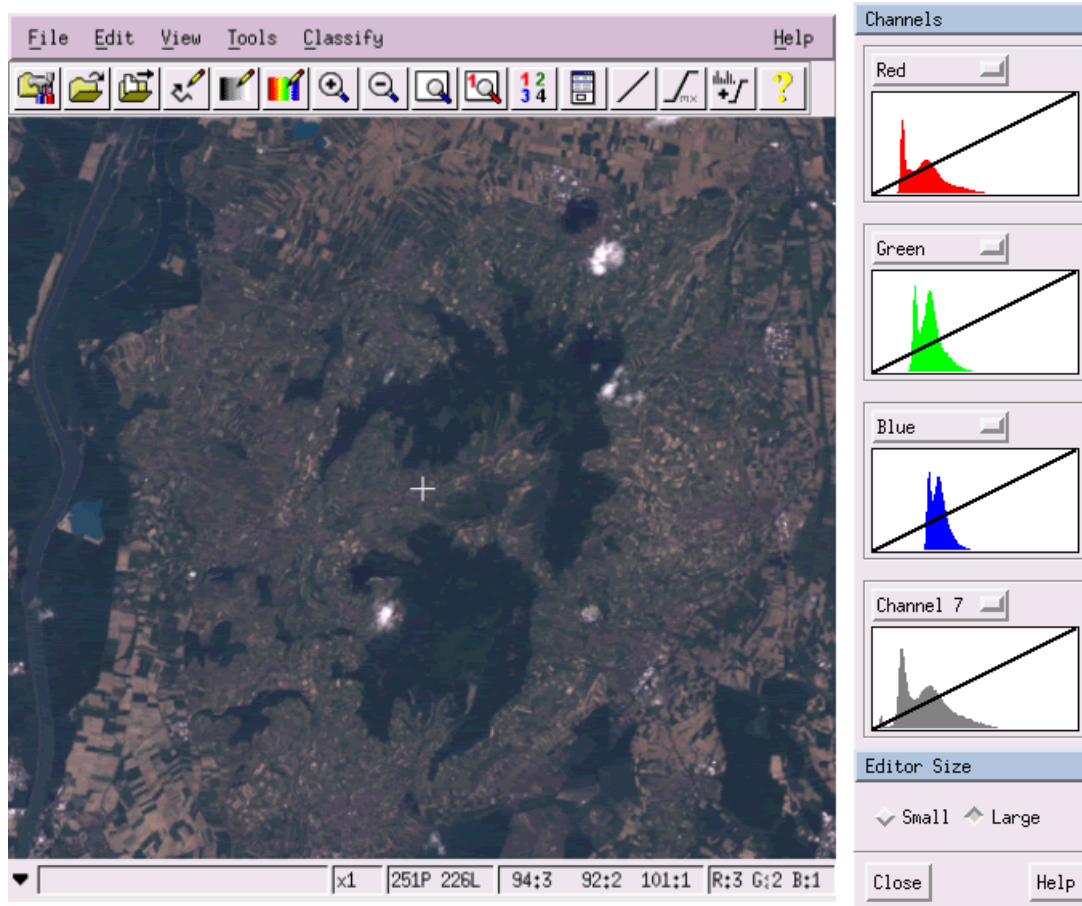
Original

Beispiel 1

Beispiel 2



# Fernerkundung **Histogramme**



# Fernerkundung **Histogramme**

The screenshot displays a software interface for remote sensing analysis. The main window shows a satellite image of a landscape with a river on the left and a town at the bottom. A toolbar at the top contains various icons for file operations, editing, and analysis. The 'Channels' panel on the right shows histograms for the Red, Green, and Blue channels, each with a black diagonal line indicating a linear stretch. The 'Channel 7' histogram is also visible. Below the histograms is an 'Editor Size' section with 'Small' and 'Large' options. At the bottom of the interface, a status bar shows technical details: 'x1 | 251P 226L | 94:3 | 92:2 | 101:1 | R:3 G:2 B:1'. The 'Close' and 'Help' buttons are located at the bottom right of the interface.

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